it will not be necessary to continue the walls between the pits close to hearth, and the hot gases will have a low velocity;

5. The dimensions of the ports should be computed by the formula for the inverted weir. This will make it possible to obtain a slow velocity of flow for the hot gases and the air in these ports, and a slow gas current through the heating chamber of the pits;

6. In order to effect the mixture of the gas and the air, the heads shown in Figs. 114 and 115 may be used. The differences between these two constructions are clearly shown by the figures.

XVHI. CONTINUOUS HEATING FURNACES

In a previous chapter (page 49) it was stated that the only continuous heating furnace which was correctly constructed was the Morgan design. All the other designs for this type of furnace contain many defects, which will be analyzed in the present chapter.

The hearth of the furnace may be flat. Of late, however, the name of continuous furnace has been limited to that type of furnace in which the material to be heated is pushed or carried through the furnace upon water-cooled skids supported above the masonry hearth of the furnace, or in lower temperature work by conveyor chains. This method is logical. Like all other mediansisms in which work is placed alnd from which it is withdrawn, a furnace should be:

Correctly fed by the hot gases coming from the firebox. At the same time the products of combustion must be carried away.

The stagnation of partially cooled gases within the furnace will result in considerable damage; the hot gases from the firebox cannot get into the heating chamber and this reduces the amount of contact between the hot gases and the material being heated, and in addition reduces the temperature differential between the gases and the material.

When the ingots or billets are carried upon tubes there is *below them* a canal or flue of a sufficient height to carry the chilled gas dropping below the material being heated, and to carry this cool gas to the chimney port *in its flaw along the hearth.* As it passes off from the heating chamber its place is taken by hotter gases. This arrangement results in a uniform

circulation of the gases. The flame of the reacting gases is in the highest and